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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|---|-------------|-----------------------|-------------------------|------------------|
| 09/824,960  | 04/03/2001  | Grenville J. Armitage | ARMITAGE 2              | 1881             |
| 7590  | 08/16/2004  |                       | EXAMINER                |                  |
| John E. Curtin, ESQ.<br>Troutman Sanders LLP<br>1660 International Drive<br>Suite 600<br>McLean, VA 22102 |             |                       | Perez Daple, Aaron C    |                  |
|   |             |                       | ART UNIT                | PAPER NUMBER     |
|   |             |                       | 2154                    |                  |
|   |             |                       | DATE MAILED: 08/16/2004 |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                 |                        |
|------------------------------|---------------------------------|------------------------|
| <b>Office Action Summary</b> | Application No.                 | Applicant(s)           |
|                              | 09/824,960                      | ARMITAGE, GRENVILLE J. |
|                              | Examiner<br>Aaron C Perez-Daple | Art Unit<br>2154       |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 03 April 2001.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-14 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____.   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/3/01</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

1. This Action is in response to Application filed 4/3/01, which has been fully considered.
2. Claims 1-14 are presented for examination.
3. This Action is non-Final.

### *Claim Objections*

4. **Claim 4** is objected to for improper numbering. A claim may not depend from itself.

Although claims 4-11 are not required to be further treated on their merits, for the purpose of applying prior art, the Examiner interprets that claim 4 should depend from claim 1.

5. **Claims 8, 11 and 14** are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, claims 8, 11 and 14 recite that the unicast address is placed as the source address in the encapsulating header. However, claim 8 depends from claim 7, and claim 7 requires that the local address is placed as the source address in the encapsulating header. Similarly, claims 11 and 14 depend from claims 10 and 13, respectively, and claims 10 and 13 require that the local address is placed as the source address in the encapsulating header. Because a packet header has only one source address, it is not possible for claims 7 and 8 to be simultaneously true. For the same reasons, claims 10 and 11 and claims 13 and 14 can not be simultaneously true.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 8, 11 and 14** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 8, 11 and 14 recite that the unicast address is placed as the source address in the encapsulating header. However, claim 8 depends from claim 7, and claim 7 requires that the local address is placed as the source address in the encapsulating header. Similarly, claims 11 and 14 depend from claims 10 and 13, respectively, and claims 10 and 13 require that the local address is placed as the source address in the encapsulating header. Because a packet header has only one source address, it is not possible for claims 7 and 8 to be simultaneously true. For the same reasons, claims 10 and 11 and claims 13 and 14 can not be simultaneously true. For the purpose of applying prior art, the Examiner interprets that using either the local address or the unicast address of the first mobile host as the source address in the encapsulating header is sufficient to anticipate the limitations of claims 8, 11 and 14.

8. **Claims 9-11** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the claim recites that a packet is transmitted out of the subnet (U1) by encapsulating packets with headers whose destination address is the group address (M1) of the first interface of the home router. First, the Examiner notes that “the group address” lacks proper antecedent basis. Although, “group addresses” have been

claimed corresponding to members of the subnet, a group address has not been claimed for the interface itself. Furthermore, the group address (M1), as shown in Fig. 2 and described in the specification, corresponds to the multicast subnet U1. Therefore, sending a packet (by setting the destination address) to M1 would then forward the packet back to U1. The packet would not be transmitted outside of the subnet as claimed. For the purpose of applying prior art, the Examiner interprets that any teaching of transmitting a packet outside of a multicast subnet is sufficient to meet the limitations of the claim.

9. As dependent claims, claims 10 and 11 suffer from the same deficiencies as claim 9.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
11. **Claims 1, 2 and 4-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins ed. (RFC 2002, <http://www.ietf.org/rfc/rfc2002.txt?number=2002>, October 1996) (hereinafter Perkins) in view of Harvey et al. (US 6,189,039 B1) (hereinafter Harvey).

12. As for claim 1, Perkins discloses a method of supporting a mobile host on an information network configured for multicast routing, comprising:

defining a subnet (U1) of the network that includes one or more mobile hosts and a first interface of a home router in the network, and identifying the first interface and the mobile hosts with corresponding unicast network addresses (U1.x) (Sections 1.4, 1.5 and 1.7; Both

the long-term – or *home* – IP address and link-layer addresses are unicast addresses identified with the mobile nodes. Note that the home router also has a corresponding IP address and link-layer address.);

assigning the first interface of the home router and the mobile hosts corresponding group addresses (M<sub>x</sub>) according to a defined relation with respect to said unicast network addresses (Section 4.4, Multicast Datagram Routing);

linking the mobile hosts with the network at corresponding points of attachment (Section 1.7, Protocol Overview, note registration);

sending a request from a given mobile host to join a group corresponding to a group address assigned to the given mobile host each time the mobile host links with the network at a new point of attachment, thereby enabling routers in the network to track the mobile host as it moves its link with the network from one point of attachment to another, and to route unicast packets originating from a host outside the subnet and destined to a given mobile host, by way of a virtual link defined between the home router and the given mobile host (Section 1.7, Protocol Overview, note registration and tunneling; Section 4.4, Multicast Datagram Routing, note joining of group and tunneling).

Perkins does not specifically disclose mapping, at the second interface of the home router, unicast addresses of packets received at the second interface and destined to members of the subnet, to the group addresses assigned to the members of the subnet. Harvey teaches:

identifying a second interface of the home router with a corresponding unicast network address (U2.x) (IP unicast socket connection, step 112, Fig. 6; col. 6, line 58 – col. 7, line 4); and

mapping, at the second interface of the home router, unicast addresses of packets received at the second interface and destined to members of the subnet (U1), to the group addresses (Mx) assigned to the members of the subnet (col. 6, line 58 – col. 7, line 4; Fig. 6).

Harvey's teachings provide the advantage of allowing communication between unicast and multicast subnets and minimizing network traffic (col. 1, lines 27-40; col. 1, line 62 – col. 2, line 11). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Perkins by mapping, at the second interface of the home router, unicast addresses of packets received at the second interface and destined to members of the subnet, to the group addresses assigned to the members of the subnet in order to allow for communications between unicast and multicast subnets and minimize network traffic, as taught by Harvey above.

13. As for claim 2, Perkins teaches a method similar to claim 1, including linking a given mobile host with the network by way of a wireless link with a base station that is connected to the network (Section 1.2, Goals).
14. As for claim 4, Perkins teaches a method similar to claim 1, including assigning the mobile hosts unique local addresses (Lx) corresponding to the current points of attachment of the mobile hosts with the information network (link-layer address, Sections 1.6 and 1.7).
15. As for claim 5, Perkins teaches a method similar to claim, wherein a local address is assigned to a given mobile host by a network router associated the host's current point of attachment with the network (Section 1.7).
16. As for claim 6, Perkins teaches a method similar to claim 4, including transmitting information packets from a first mobile host on the subnet (U1) to a second mobile host on

the subnet, by encapsulating the packets with an encapsulating header whose destination address is the group address (Mx) assigned to the second mobile host (Section 4.4, Multicast Datagram Routing).

17. As for claim 7, Perkins teaches a method similar to claim 6, including placing the local address (Lx) of the first mobile host as the source address in the encapsulating header (Section 1.7).
18. As for claim 8, Perkins teaches a method similar to claim 7, including placing the unicast address (U1.x) of the second mobile host as the destination address in an encapsulated header of the packets, and placing the unicast address (U1.y) of the first mobile host as the source address in the encapsulated header (Sections 1.5 and 1.7).
19. As for claim 9, Perkins teaches a method similar to claim 4, including transmitting information packets from a given mobile host on the subnet (U1) to a host outside the subnet, by encapsulating the packets with an encapsulating header whose destination address is the group address (M1) assigned to the first interface of the home router (Section 1.7; Section 4.4).
20. As for claim 10, Perkins teaches a method similar to claim 9, including placing the local address (Lx) of the given mobile host as the source address in the encapsulating header (Section 1.7).
21. As for claim 11, Perkins teaches a method similar to claim 10, including placing the unicast address (U2.x) of the host outside the subnet as the destination address in an encapsulated header of the packets, and placing the unicast address (U1.x) of the given mobile host as the source address in the encapsulated header (Sections 1.5 and 1.7).

22. As for claim 12, Perkins teaches a method similar to claim 1, including transmitting multicast information packets from a given mobile host on the subnet to a group (G) of other hosts on the network, by encapsulating the packets with an encapsulating header whose destination address is the group address (M1) assigned to the first interface of the home router (Section 4.4, Multicast Datagram Routing).
23. As for claim 13, Perkins teaches a method similar to claim 12, including placing the local address (Lx) of the given mobile host as the source address in the encapsulating header (Section 1.7).
24. As for claim 14, Perkins teaches a method similar to claim 13, including placing the group address (G) of the other hosts as the destination address in an encapsulated header of the packets, and placing the unicast address (U1.x) of the given mobile host as the source address in the encapsulated header (Sections 1.5 and 1.7).
25. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins in view of Harvey and in further view of Reid (US 6,131,120) (hereinafter Reid). Although obvious to one of ordinary skill in the art, neither Perkins nor Harvey specifically disclose linking a given mobile host with the network by using a modem that is connected to a public switched telephone network having a server which is linked with the information network. Reid teaches linking a given mobile host with the network by using a modem that is connected to a public switched telephone network having a server which is linked with the information network (col. 1, lines 46-57; Fig. 1). It would have been obvious to one of ordinary skill in the art to modify the teachings of Perkins and Harvey by linking a given mobile host with the network by using a modem that is connected to a public switched telephone network having a

server which is linked with the information network, in order to remotely access a network as taught by Reid above.

***Conclusion***

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,701,437 B1, note teaches replacing source address with local address; US 6,654,792 B1, note teaches using local address as source address; US 5,778,187, note teaches mapping unicast to multicast; US 6,181,697 B1, note teaches mapping unicast to multicast; US 5,930,259, note abstract; US 6,611,510 B2, note abstract; US 2001/0036834 A1, note Fig. 1; US 6,243,758 B1, note basic home/foreign network with tunneling; US 6,577,609 B2, note Fig. 1; US 6,611,872 B1, note multicasting with overlay; US 6,640,251 B1, note new multicasting protocol.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703) 305-4897. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information

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8/2/04

Aaron Perez-Daple



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